



State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQE-AN149250001-14

June 5, 2014

State of Utah - Division of Air Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820

Re: Approval Order: General Approval Order for a Crude Oil and Natural Gas Well Site and/or Tank
Battery
Project Number: N149250001

The attached document is the Approval Order for the above-referenced project. Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. The project engineer for this action is Mr. Alan D. Humpherys, who may be reached at (801) 536-4142.

Sincerely,

Bryce C. Bird
Director

BCB:AH:jc

cc: Salt Lake Valley Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

**APPROVAL ORDER: General Approval Order for a Crude Oil
and Natural Gas Well Site and/or Tank Battery**

Prepared By: Mr. Alan D. Humpherys, Engineer

Phone: (801) 536-4142

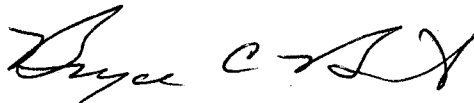
Email: ahumpherys@utah.gov

APPROVAL ORDER NUMBER

DAQE-AN149250001-14

Date: June 5, 2014

**General Approval Order: Crude Oil and Natural Gas
Well Site and/or Tank Battery**

A handwritten signature in black ink, appearing to read "Bryce C. Bird", with a stylized flourish at the end.

**Bryce C. Bird
Director**

Abstract

A General Approval Order (GAO) may be issued under the authority of UAC R307-401-19. This GAO is for a Crude Oil and/or Natural Gas Well Site and/or Tank Battery. Produced fluids will be brought to the surface from a single well or multiple wells. Oil, condensate, water, and gas will be separated from the produced fluid. The oil, condensate, and water will be stored in tanks prior to being transported off site by trucks. The gas may pass through a dehydrator on site. The gas shall either be used as fuel for onsite equipment or be routed to a gas gathering system and sent off site. This GAO will cover a facility that processes up to 50,000 barrels of crude oil and condensate combined per year. A dispersion modeling analysis was conducted for NO₂. Conditions in this GAO reflect the results of this modeling analysis and will ensure protection of the NAAQS. The HAP emissions are limited by emission controls and equipment specification to ensure the requirements in R307-410-5(1)(c)(ii) or (iii) will not be triggered.

A source must comply with the requirements of R307-401-19(4) to be subject to this GAO. If a source is not able to construct within the requirements of this GAO, the source must submit a NOI under R307-401-5 and obtain an AO under R307-401-8.

NSPS 40 CFR 60 Subpart A, Dc, JJJJ, and OOOO, and MACT 40 CFR 63 Subpart A, HH, and ZZZZ regulations may apply to this source. NESHAP 40 CFR 61 regulations do not apply to this source. Title V of the 1990 Clean Air Act does not apply to this source.

The potential emissions, in tons per year, are estimated to be as follows: PM₁₀ = 0.56 (which includes PM_{2.5}), PM_{2.5} = 0.52, NO_x = 8.45, CO = 12.94, VOC = 13.55, HAPs = 2.55, and CO₂e = 6,348.

This air quality GAO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order. This GAO is issued to, and applies to the following:

Name of Permittee:

State of Utah - Division of Air Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820

Permitted Location:

General Approval Order: Crude Oil and Natural
Gas Well Site and/or Tank Battery
Applicable State Wide
State Wide, UT

SIC code:1311 (Crude Petroleum & Natural Gas)

Section I: GENERAL PROVISIONS

- I.1 All definitions, terms, abbreviations, and references used in this GAO conform to those used in the Utah Administrative Code (UAC) Rule 307 (R307) and Title 40 of the Code of Federal Regulations (40 CFR). Unless noted otherwise, references cited in these GAO conditions refer to those rules. [R307-101]
- I.2 The limits set forth in this GAO shall not be exceeded without prior approval. [R307-401]
- I.3 Modifications to the equipment or processes approved by this GAO that could affect the emissions covered by this GAO must be reviewed and approved in accordance with UAC R307-401. [R307-401-1]
- I.4 All records referenced in this GAO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this GAO or in other applicable state and federal rules, records shall be kept for a minimum of two (2) years. [R307-401-8]

- I.5 At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this GAO including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this GAO shall be recorded. [R307-401-4]
- I.6 The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
- I.7 The owner/operator shall comply with UAC R307-150 Series. Inventories, Testing and Monitoring. [R307-150]
- I.8 The owner/operator shall comply with UAC R307-401-19(4), General Approval Order: Application, and receive approval according to R307-401-19(5), General Approval Order: Approval, to become subject to this GAO. [R307-401-19]

Section II: SPECIAL PROVISIONS

II.A The approved installations shall consist of the following equipment:

- II.A.1 **Crude Oil & Natural Gas Well Site/Tank Battery**
- II.A.2 **Produced Fluids Storage Tanks**
Contents: Crude Oil, Condensate, and/or Produced Water
Maximum Site-Wide Capacity: 2,200 barrels
Maximum Individual Capacity: 550 barrels
- II.A.3 **Dehydrators**
Maximum Site-Wide Capacity: 2.0 MM scf/day
- II.A.4 **VOC Control Device**
Minimum Control Efficiency: 98%
- II.A.5 **Natural Gas-Driven Pneumatic Controllers**
- II.A.6 **Natural Gas-Driven Pneumatic Pumps**
- II.A.7 **Truck Loading Operations**
- II.A.8 **Pumpjack, Gas Lift, and Generator Engines**
Maximum Site-Wide Rating: 130 hp
Fuel: Natural Gas or LPG
- II.A.9 **Various Boilers/Heaters**
Maximum Site-Wide Capacity: 10.0 MMBtu/hr combined
Fuel: Natural Gas or LPG
- II.A.10 **Methanol & Ethylene Glycol Storage Vessels**
Maximum Site-Wide Capacity: 1,000 gallons combined
- II.A.11 **Heater Treaters**
Oil/Water Separator
- listed for informational purposes only -

II.A.12 **Compressors & Pumps**
centrifugal and/or reciprocating
- listed for informational purposes only -

II.A.13 **One (1) Emergency/Overflow Storage Tank**
Maximum Capacity: 550 barrels
- listed for informational purposes only -

II.B **Requirements and Limitations**

II.B.1 **Site-Wide Requirements**

II.B.1.a The owner/operator shall not exceed 50,000 barrels (1 barrel = 42 gallons) of crude oil and condensate throughput combined per rolling 12-month period. [R307-401-8]

II.B.1.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of crude oil and condensate throughput shall be kept for all periods when the plant is in operation. Crude oil and condensate throughput shall be determined by process flow meters, load tickets, sales meters, and/or sales records. The records of crude oil and condensate throughput shall be kept on a monthly basis. [R307-401-8]

II.B.1.b All gas produced from the Heater Treater shall either be used as fuel on site or be routed to a gas gathering system and sent off site. [R307-401-8]

II.B.1.c A sign shall be located at the site entrance that indicates the presence of oil and gas operations and the potential for exposure to emissions from oil and gas operations. [R307-401-8]

II.B.1.d A source subject to this GAO shall not be located within 100 meters (328 feet) of a residential or commercial business building or structure. [R307-401-8]

II.B.1.e Unless otherwise specified in this GAO, visible emissions from any stationary or fugitive emission source on site shall not exceed 10 percent opacity. [R307-401-8]

II.B.1.e.1 Unless otherwise specified in this GAO, opacity observations of fugitive and non-fugitive emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. For intermittent sources and mobile sources, opacity observations shall be conducted using Method 9; however, the requirement for observations to be made at 15 second intervals over a six-minute period shall not apply. [R307-201-3]

II.B.1.f The owner/operator shall notify the Director in writing when the equipment listed in this GAO has been installed and is operational within 30 days after startup. To ensure proper credit when notifying the Director, send your correspondence to the Director, attn: Compliance Section.

If the owner/operator has not notified the Director in writing of the installation and operation of the equipment listed in this GAO within 18 months of a source being granted approval under this GAO, the owner/operator shall submit documentation of the continuous construction and/or installation of the operation to the Director. If a continuous program of construction and/or installation is not proceeding, the Director may require the source to submit a NOI according to R307-401-5. [R307-401-18]

II.B.1.g The owner/operator shall submit a list of the actual equipment installed on site and the potential emissions from this equipment to the Director within 180 days after startup. [R307-401-8]

II.B.1.h The owner/operator shall submit an annual inventory of the actual equipment on site and the actual emissions from the site to the Director on or before April 15 of each year following the first full calendar year of operation. [R307-150-1]

II.B.2 **Tank Requirements**

II.B.2.a VOC emissions from the produced fluids storage tanks shall either be routed to a process unit where the emissions are recycled, incorporated into a product, and/or recovered or be routed to a VOC control device where the emissions are consumed and/or destroyed. [R307-401-8]

II.B.2.b At least once every month, the thief hatches on the produced fluids storage tanks shall be inspected to ensure the thief hatches are closed and latched and the associated gaskets, if any, are in good working condition. If the gaskets are not in good working condition, they shall be replaced within 15 days of identification of the deficient condition. [R307-401-8]

II.B.2.b.1 Records of thief hatch inspections shall include the following:

- a. The date of the thief hatch inspection,
- b. The status of the thief hatches,
- c. Any corrective action taken, and
- d. The date of corrective action. [R307-401-8]

II.B.3 **Dehydrator Requirements**

II.B.3.a VOC emissions from dehydrators shall either be routed to a process unit where the emissions are recycled, incorporated into a product, and/or recovered or be routed to a VOC control device where the emissions are consumed and/or destroyed. [R307-401-8]

II.B.4 **VOC Control Device Requirements**

II.B.4.a Any VOC control device shall have a control/destruction efficiency of no less than 98%. [R307-401-8]

II.B.4.a.1 To show compliance with the control/destruction efficiency, the VOC control device shall be operated according to the manufacturer's written instructions when gases/vapors are vented to it. [R307-401-8]

II.B.4.a.2 The owner/operator shall keep and maintain records of the following:

- a. The VOC control device's control/destruction efficiency guaranteed by the manufacturer,
- b. The manufacturer's written operating and maintenance instructions, and
- c. The date and type of any maintenance conducted by the owner/operator. [R307-401-8]

II.B.4.b The VOC control device shall operate with no visible emissions. [R307-401-8]

II.B.4.b.1 Visual determination of emissions from the VOC control device shall be conducted according to 40 CFR 60, Appendix A, Method 22. [R307-401-8]

II.B.5 **Natural Gas-Driven Pneumatic Controller Requirements**

II.B.5.a Each natural gas-driven pneumatic controller shall comply with either a or b:

- a. A natural gas-driven pneumatic controller shall have a bleed rate less than or equal to 6 standard cubic feet per hour and shall comply with 40 CFR 60.5415(d).
- b. The VOC emissions from a natural gas-driven pneumatic controller shall either:
 - i. be routed to a process unit where the emissions are recycled, incorporated into a product, and/or recovered; or
 - ii. be routed to a VOC control device where the emissions are consumed and/or destroyed. [R307-401-8]

II.B.6 **Natural Gas-Driven Pneumatic Pump Requirements**

II.B.6.a The VOC emissions from each natural gas-driven pneumatic pump shall either:

- a. be routed to a process unit where the emissions are recycled, incorporated into a product, and/or recovered; or
- b. be routed to a VOC control device where the emissions are consumed and/or destroyed. [R307-401-8]

II.B.7 **Truck Loading Requirements**

II.B.7.a The owner/operator shall load the tanker trucks on site by the use of submerged loading or bottom fill loading. [R307-401-8]

II.B.8 **Engine Requirements**

II.B.8.a Any stationary engine on site shall only use natural gas or LPG as fuel. [R307-401-8]

II.B.8.b Any stationary engine on site shall comply with the following emission standards:

- a. For engines rated less than 100 hp: [40 CFR 1048.101(c)]
 - 1. $\text{HC} + \text{NO}_x = 3.8 \text{ g/kW-hr (2.84 g/hp-hr)}$,
 - 2. $\text{CO} = 6.5 \text{ g/kW-hr (4.85 g/hp-hr)}$,
- b. For engines rated greater than or equal to 100 hp: [40 CFR 60 Subpart JJJJ - Table 1]
 - 1. $\text{NO}_x = 1.0 \text{ g/hp-hr}$,
 - 2. $\text{CO} = 2.0 \text{ g/hp-hr}$,
 - 3. $\text{VOC} = 0.7 \text{ g/hp-hr}$. [40 CFR 60 Subpart JJJJ, R307-401-8]

II.B.8.b.1 The owner/operator shall keep and maintain the following records:

- a. The emission rate guaranteed by the manufacturer for:
 - 1. $\text{HC} + \text{NO}_x$ and CO for engines rated less than 100 hp, or
 - 2. NO_x , CO, and VOC for engines rated greater than or equal to 100 hp,
- b. The manufacturer's written operating and maintenance instructions,
- c. Any maintenance conducted by the owner/operator, and
- d. The date of the maintenance activities. [R307-401-8]

II.B.8.c Each stationary engine stack on site shall vent no less than 4 feet above ground level. [R307-401-8]

II.B.9 Boilers/Heater Requirements

II.B.9.a All boilers/heaters on site shall only use natural gas or LPG as fuel. [R307-401-8]

II.B.9.b Each boiler stack and each heater stack on site shall vent at least 1 foot above the height of the Produced Fluids Storage Tanks. [R307-401-8]

II.B.10 Leak Detection and Repair Requirements

II.B.10.a The owner/operator shall conduct an inspection of each valve, flange or other connection, pump, compressor, pressure relief device or other vent, process drain, open-ended valve, pump seal, compressor seal, and access door seal or other seal that contains or contacts a process stream with hydrocarbons according to the following schedule:

- a. No later than 90 days after startup.
- b. For sources with at least one crude oil or condensate storage tank on site:
 1. At least once every 12 months, for sources that have a projected annual throughput of crude oil and condensate combined that is greater than or equal to 10,000 barrels,
 2. At least once every 3 months after the initial inspection, for sources that have a projected annual throughput of crude oil and condensate combined that is greater than or equal to 25,000 barrels. Inspection frequency, for sources that have a projected annual throughput of crude oil and condensate combined that is greater than or equal to 25,000 barrels, shall change according to the following:
 - i. If no leaks are detected during inspections for one year, inspection frequency shall be reduced to at least once every 6 months,
 - ii. If no leaks are detected during inspections for two years, inspection frequency shall be reduced to at least once every 12 months,
 - iii. If two or more leaks are detected during any inspection, inspection frequency shall be conducted at least once every 3 months.
- c. At least once every 12 months, for sources that do not have a crude oil or condensate storage tank on site. [R307-401-8]

II.B.10.a.1 Inspections shall be conducted with an analyzer meeting U.S. EPA Method 21, 40 CFR Part 60, Appendix A, a tunable diode laser absorption spectroscopy (TDLAS), or an infrared camera that can detect hydrocarbons.

A reading of 500 ppm or greater with an analyzer or a TDLAS shall be considered a leak. Any emissions detected with an infrared camera shall be considered a leak unless the owner/operator evaluates the leak with an analyzer meeting U.S. EPA Method 21, 40 CFR Part 60, Appendix A no later than 5 calendar days after detection and the analyzer's reading is less than 500 ppm. Emissions detected from tank gauging, load-out operations, or other maintenance activities shall not be considered leaks. [R307-401-8]

II.B.10.a.2 The owner/operator is exempt from inspecting a valve, flange or other connection, pump or compressor, pressure relief device, process drain, open-ended valve, pump or compressor seal system degassing vent, accumulator vessel vent, agitator seal, or access door seal under any of the following circumstances:

- a. the contacting process stream only contains glycol, amine, methanol, or produced water,
- b. monitoring could not occur without elevating the monitoring personnel more than six feet above a supported surface or without the assistance of a wheeled scissor-lift or hydraulic type scaffold,
- c. monitoring could not occur without exposing monitoring personnel to an immediate danger as a consequence of completing monitoring, or
- d. the item to be inspected is buried, insulated in a manner that prevents access to the components by a monitor probe, or obstructed by equipment or piping that prevents access to the components by a monitor probe. [R307-401-8]

II.B.10.b

If a leak is detected at any time, the owner/operator shall attempt to repair the leak no later than 5 calendar days after detection. Repair of the leak shall be completed no later than 15 calendar days after detection, unless parts are unavailable or unless repair is technically infeasible without a shutdown. The owner/operator shall inspect the repaired leak no later than 15 calendar days after the leak was repaired to verify that it is no longer leaking.

If replacement parts are unavailable, the replacement parts must be ordered no later than 5 calendar days after detection, and the leak must be repaired no later than 15 calendar days after receipt of the replacement parts.

If repair is technically infeasible without a shutdown, the leak must be repaired by the end of the next shutdown. If a shutdown is required to repair a leak, the shutdown must occur no later than 6 months after the detection of the leak unless the owner/operator demonstrates that emissions generated from the shutdown are greater than the fugitive emissions likely to result from delay of repair. [R307-401-8]

II.B.10.c

Records of inspections and leak detection and repair shall include the following:

- a. The date of the inspection,
- b. The name of the person conducting the inspection,
- c. Any component not inspected and the reason it was not inspected,
- d. The identification of any component that was determined to be leaking,
- e. The analyzer's or TDLAS reading (if used),
- f. The date of first attempt to repair the leaking component,
- g. Any component with a delayed repair,
- h. The reason for a delayed repair,
 - 1. For Unavailable Parts:
 - i. The date of ordering a replacement component,
 - ii. The date the replacement component was received,
 - 2. For a Shutdown:
 - i. The reason the repair is technically infeasible,
 - ii. The date of the shutdown,
 - iii. Emission estimates of the shutdown and the repair if the delay is longer than 6 months,
- i. Corrective action taken,
- j. The date corrective action was completed, and
- k. The date the component was verified to no longer be leaking. [R307-401-8]

Section III: APPLICABLE FEDERAL REQUIREMENTS

In addition to the requirements of this GAO, all applicable provisions of the following federal programs may apply to this installation. This GAO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including UAC R307.

NSPS (Part 60), A: General Provisions

NSPS (Part 60), Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS (Part 60), JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS (Part 60), OOOO: Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

MACT (Part 63), A: General Provisions

MACT (Part 63), HH: National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities

MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

ADMINISTRATIVE CODING

The following information is for UDAQ internal classification use only:

State Wide County

CDS B

MACT (Part 63), NSPS (Part 60),

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ	Division of Air Quality (typically interchangeable with UDAQ)
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GAO	General Approval Order
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO _x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM ₁₀	Particulate matter less than 10 microns in size
PM _{2.5}	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO ₂	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
UDAQ	Utah Division of Air Quality (typically interchangeable with DAQ)
VOC	Volatile organic compounds